

REMARKS

Claims 1, 18, and 21 have been amended. No claims have been canceled. No new claims have been added. Thus, claims 1-21 are pending.

The Office Action objected to the drawings. Concurrently filed with the present amendment is a proposed drawing correction. The proposed drawing correction adds a "PRIOR ART" label to Fig. 1. Additionally, Fig. 1 now includes reference numeral 100. The Office Action further objected to reference signs 102 and CB as not being described in the specification. The specification has been amended to include descriptions of reference signs 101 and CB. Accordingly, the Examiner is requested to approve the proposed drawing correction and withdraw the objection to the drawings.

Claims 1-2 and 6-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borg (U.S. Patent No. 6,476,864) and Fossum (U.S. Patent No. 5,949,483). Claims 3-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borg, Fossum, and Pezzini (U.S. Patent No. 6,124,821). These rejections are respectfully traversed.

Claim 1 recites, *inter alia*, "a plurality of pixel readout circuits ... to compute a difference signal ... said difference signal being measured with respect to a reference signal" and "an amplifier configured to receive said reference signal as a bias signal, said amplifier supplying said reference signal to said plurality of pixel readout circuits during computation of said difference signal, and said amplifier amplifying said difference signal when the computation is completed."

Claim 18 recites, *inter alia*, "readout circuits configured to read said electrical signals from said series of pixels with respect to a reference signal" and "an amplifier

configured to provide said reference signal while said readout circuit is reading said electrical signal, and to provide amplification of said referenced electrical signals when the reading is done, wherein said reference signal is also used to bias said amplifier to a predetermined operating point.”

Claim 21 recites, *inter alia*, “a plurality of pixel readout circuits ... to compute a difference signal between said charge-induced signal and said reset signal, said difference signal being measured with respect to a reference signal” and “an amplifier coupled to said each pixel readout circuit, said amplifier configured to supply said reference signal during computation of said difference signal, wherein said amplifier is biased to a predetermined operating point by said reference signal, and said amplifier is operated to amplify said difference signal when the computation is done.”

Borg is directed to a pixel column amplifier architecture for reducing noise from a differential image signal received from a pixel array. More specifically, Borg discloses a system having a first double sampling circuit and a second double sampling circuit, wherein both sampling circuits are supplied with a common reference voltage.

The Office Action alleges that Borg fails to disclose “the details of the readout circuits” and therefore concludes that Borg does not teach or suggest the recited pixel readout circuit. While applicant’s representative agrees with the Office Action’s conclusion, it should be noted that Borg in fact discloses details regarding at least a portion of a pixel readout circuit. With reference to Fig. 4, the portion of the pixel readout circuit disclosed by Borg comprises bias transistors 36, column signal lines 38, 102, and bias power lines 44. In particular, the column signal line 38 and the reference signal line 102 are each biased via a respective transistors 36 and bias power lines 44. Additionally, Borg also discloses a column amplifier 230 and a reference column amplifier 240. Both amplifiers 230, 240 are biased via a reference power source 88.

Accordingly, Borg actually discloses a pixel read out circuit which is biased via a first signal (i.e., from bias power lines 44) and an amplifier (e.g., 230 or 240) which is biased via a second signal (Vref from power source 88). See Fig. 4; column 7, lines 4-45. In contrast, the above quoted portions of the independent claim recite using a same reference voltage for biasing the amplifier and for serving as a reference point (i.e., a bias point) for the signals from the pixels. It is respectfully asserted that Borg, by disclosing the use of different signals, teaches away from the claimed invention.

Fossum discloses an imaging device. The Office Action cites to Fossum for its teaching of "a signal chain for an image sensor, comprising: a plurality of photo sensing elements (10); and a plurality of pixel readout circuits (70)." Office Action at page 3. As noted above, the independent claims require one reference voltage to serve as both a bias point for the pixel read out circuit(s) and the amplifier. This feature is not taught or suggested by Fossum.

Pezzini discloses an array of capacitors. The Office Action cites to Pezzini for its teaching of a binary scaled capacitor network. However, Pezzini, like Borg and Fossum, fails to disclose or suggest the features recited in the above quoted portions of claims 1, 18, and 21.

Accordingly, claims 1, 18 and 21 are believed to be allowable over the prior art of record. The depending claims (i.e., claims 2-17 and 19-20) are also believed to be allowable for at least the same reason as the independent claims.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Application No.: 09/590,785

Docket No.: M4065.0813/P813

Dated: June 28, 2004

Respectfully submitted,

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